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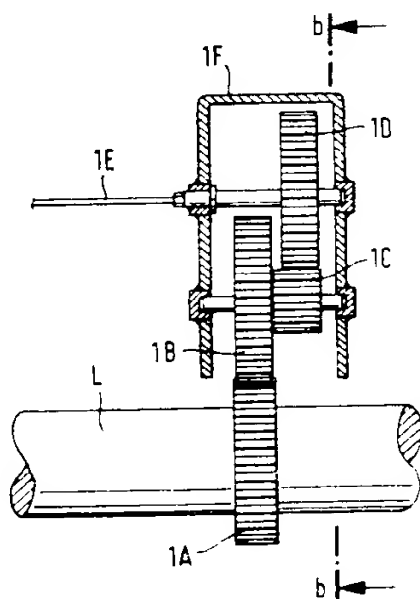
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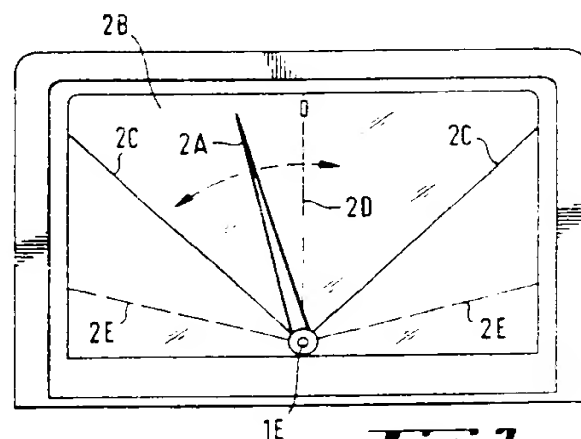
the dial to indicate the degree of angular movement of the wheels. Lines (2E) on the dial indicate the maximum steering angle, and further lines (2C) indicate a parking angle for use when reversing.

(54) A device for indicating the turning angle of the front wheels of a vehicle

(57) A device for indicating the turning angle of the front wheels of a vehicle which includes a transmission gear arrangement (1A, 1B, 1C and 1D) interconnecting the steering shaft (L) of the vehicle and an indicator shaft (1E). The latter shaft (1E) is connected to the needle (2A) of an indicator dial (2B) such that during turning movement of the front wheels, the needle moves over

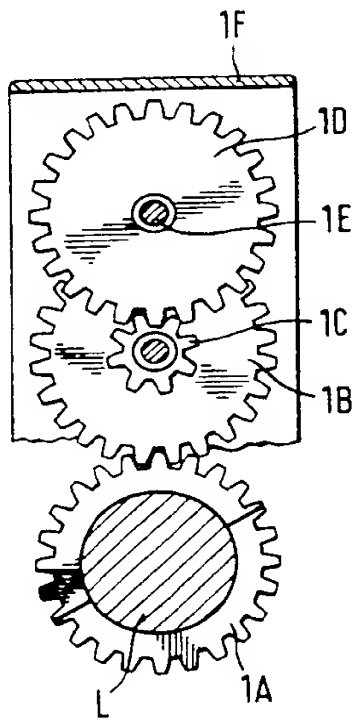


**Fig. 1a**

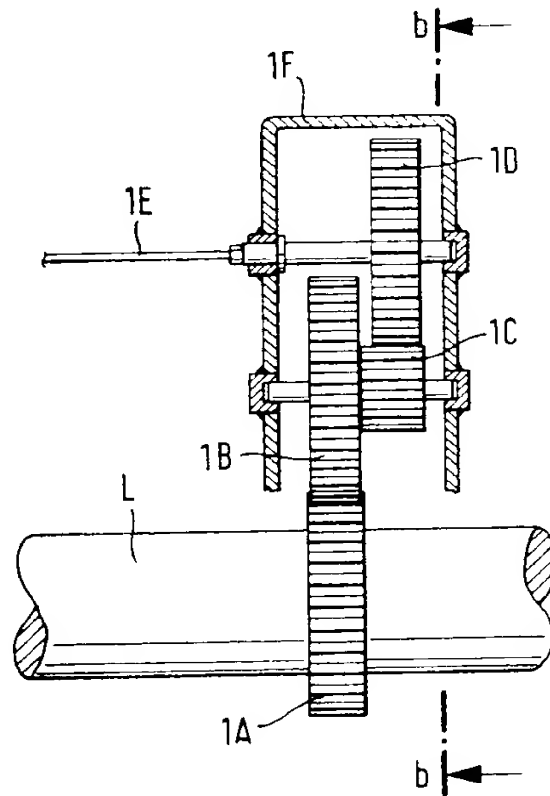


**Fig. 2**

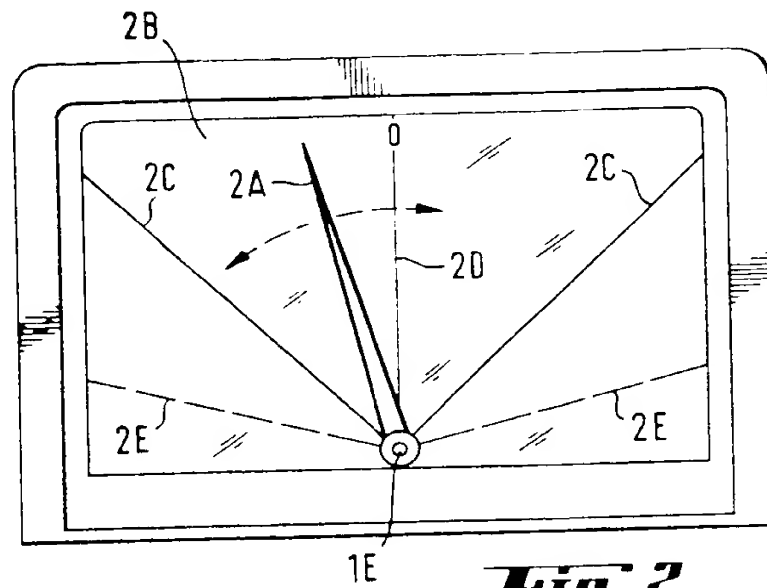
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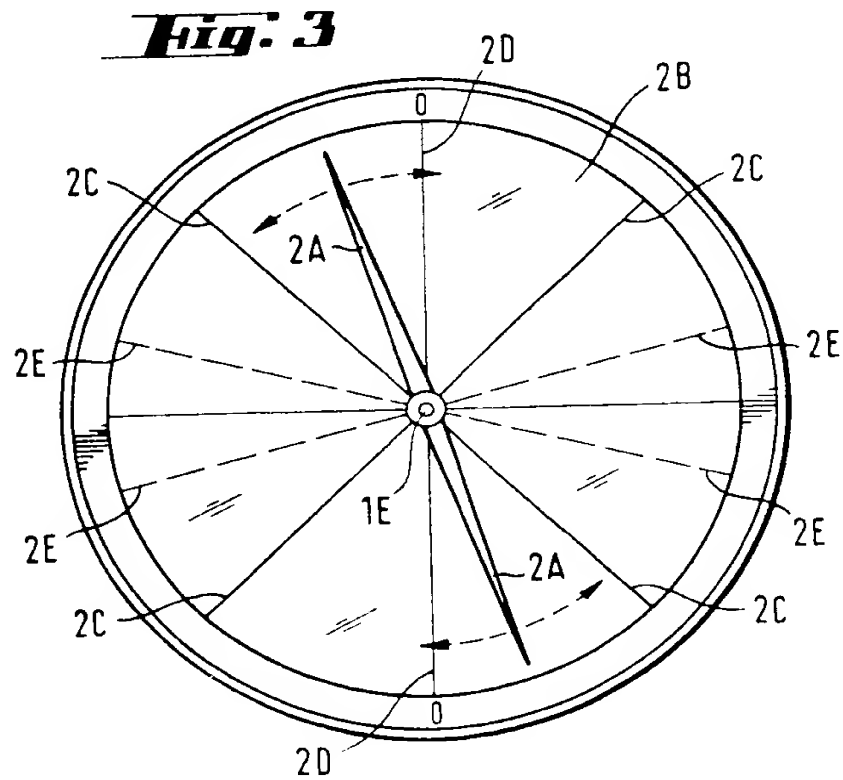
**Fig. 1b**



**Fig. 1a**



**Fig. 2**



**Fig. 3**

## SPECIFICATION

**A device for indicating the turning angle of the front wheels of a vehicle**

5 This invention relates to a device for indicating the turning angle of the front wheels of a vehicle. During many driving situations, especially while reversing, it is desirable to know  
 10 the exact position of the steering front wheels of a vehicle in order to estimate, in advance, the behaviour of the vehicle. Especially before reversing into a parking space, the driver is at a disadvantage in not being able to see the  
 15 exact position of the front wheels of the vehicle. This is particularly disadvantageous for learner drivers. As the front wheels of an automobile are not visible from the driver's seat, only the behaviour of the vehicle when  
 20 starting to move will give the driver the approximate position of the front wheels.

The object of the invention is to provide a device which will show the driver of a vehicle at any time the momentary position of the  
 25 steering front wheels thereof. The exact position is shown on an indicator dial on the instrument panel and/or at the rear of the passenger compartment. With this device the reversing procedure into a parking space, for  
 30 example, is made easier, particularly for an inexperienced driver or learner driver, as well as for an experienced driver.

The present invention consists in a device for indicating the turning angle of the front  
 35 wheels of a vehicle comprising, a transmission gear arrangement having its input end connected to the steering shaft of the vehicle and its output end connected to an indicator shaft which moves a swivel-mounted needle over a  
 40 turning angle indicating dial.

This device facilitates the vehicle reversing parking procedure, because it shows at any time like a compass, the exact angle of the steering wheels during the manoeuvre.

45 By observing the needle of the indicating device, the exact parking angle, which is about 45 degrees, can easily be maintained.

In the accompanying drawings:—

50 *Figure 1* is a side and end view of a gear arrangement which transmits the movement of a steering shaft to a swivel-mounted needle forming the indicating device of the present invention.

55 *Figure 2* is a view of an indicating dial having an end swivel-mounted needle, and

*Figure 3* is a view of an indicating dial having a centre swivel-mounted needle.

Fixedly mounted on a steering shaft *L* is a spur gear *1A* whose teeth mesh with the teeth  
 60 of a gearwheel mounted inside a transmission gear housing *1F*. Whilst the gear *1A* may be mounted on the steering shaft *L* by means of adhesive, for easier assembly of the gear *1A*, it is advantageous to have it separable into  
 65 two parts

The gear housing *1F* is mounted at a suitable position inside an automobile engine compartment adjacent the steering shaft in a manner such that the necessary meshing of  
 70 the gears *1A* and *1B* is made possible.

Mounted on the shaft of the driven gearwheel *1B* is a smaller reduction gearwheel *1C* which rotates with and at the same speed as the gearwheel *1B*. The reduction gearwheel *1C*  
 75 meshes with an indicator gearwheel *1D* fixedly mounted on a further shaft positioned inside the gear housing *1F*. This shaft is the take-off shaft of the transmission gear and is coupled with an indicator shaft *1E*, which is  
 80 connected to a swivel-mounted needle *2A* of an indicating dial *2B*. The indicator shaft *1E* may be formed of a flexible wire.

The ratio of the transmission gear is chosen such that the steering movement of the front  
 85 wheels of an automobile is transmitted at a ratio of 1:1 to the indicator shaft *1E*. The indicator shaft *1E* transmits the steering movement which has been reduced by the transmission gear onto the swivel-mounted  
 90 needle *2A*, with the result, that the steering movement of the front wheels of the vehicle is transmitted to the indicating dial *2B* at the ratio of 1:1.

The indicating dial *2B* can be mounted  
 95 inside the automobile on the instrument panel and/or at the rear of the passenger compartment so that whilst looking rearwardly, the driver can easily see the position of the swivel-mounted needle *2A* on the indicating dial  
 100 *2B*, while reversing the vehicle.

The, or each indicating dial *2B* has the following markings:—

In the centre, the centreline *2D* is marked with an "0" for zero degrees at its top in Fig.  
 105 2 and at its top and bottom in Fig. 3. If the front wheels of the vehicle are precisely in the straight-ahead position 0-angle, the the swivel mounted needle *2A* is coincident with the centreline *2D*. If the front wheels are moved  
 110 by the steering shaft *L*, the needle *2A* moves in accordance with the movement of the steering shaft from its zero-angle position to the right or to the left, depending in which direction the steering wheel is turned.

115 On both sides of the centreline *2D* on the indicating dial *2B* lines of demarcation *2E* indicate the maximum possible wheel turn of the vehicle to the left as well as to the right. These lines of demarcation *2E* are individually  
 120 calculated, depending on the make of the vehicle. Also, on both sides of the centreline *2D* lines of demarcation *2C* are marked which represent the parking angle *2C*. These practically tested parking angles *2C* are measured  
 125 at about 45 degrees and therefore this line of demarcation *2C* (the reversing parking angle) is at an angle of about 45 degrees relative to the centreline *2D*. By observing the position of the needle *2A* on the indicating dial *2D*,  
 130 the driver will always be able to see the exact

angle of the front wheels of the vehicle.

#### CLAIMS

1. A device for indicating the turning angle of the front wheels of a vehicle comprising, a transmission gear arrangement having its input end connected to the steering shaft of the vehicle and its output end connected to an indicator shaft which moves a swivel-mounted needle over a turning angle indicating dial
2. A device according to claim 1, wherein the indicating dial has a centreline marked with "0" on which the axis of the needle is mounted
3. A device according to claim 2, wherein the indicating dial has on both sides of the centreline lines of demarcation which indicate the maximum turning angle of the front wheels
4. A device according to claim 2 or 3, wherein the indicating dial has on both sides of the centreline lines of demarcation which indicate the "parking angle" left and "parking angle" right to facilitate parking of the vehicle when driven in reverse.
5. A device according to claim 4, wherein the parking angle lines of demarcation are arranged approximately at a 45 degree angle in the turning direction of the needle.
6. A device according to any of claims 1 to 5, wherein the transmission gear arrangement is mounted in a housing fixed inside the vehicle adjacent the steering shaft.
7. A device according to any of claims 1 to 6, wherein the transmission gear arrangement comprises spur gears, one of which is fixedly mounted on the steering shaft.
8. A device for indicating the turning angle of the front wheels of a vehicle substantially as described with reference to, and as illustrated in, Figs. 1 and 2, or Figs. 1 and 3, of the accompanying drawings.